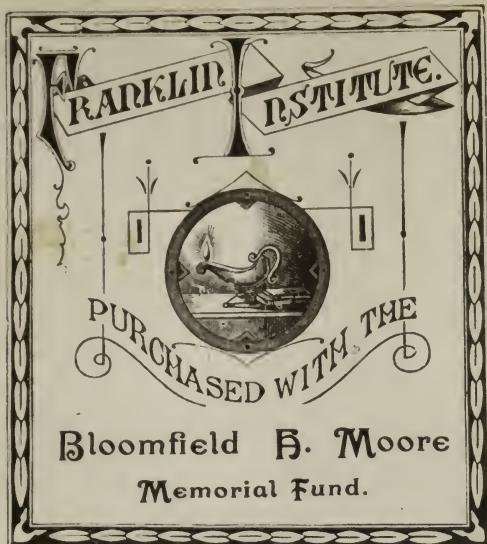


THE GUIDE
FOR
PIECE DYEING
BY
F. W. REISIG



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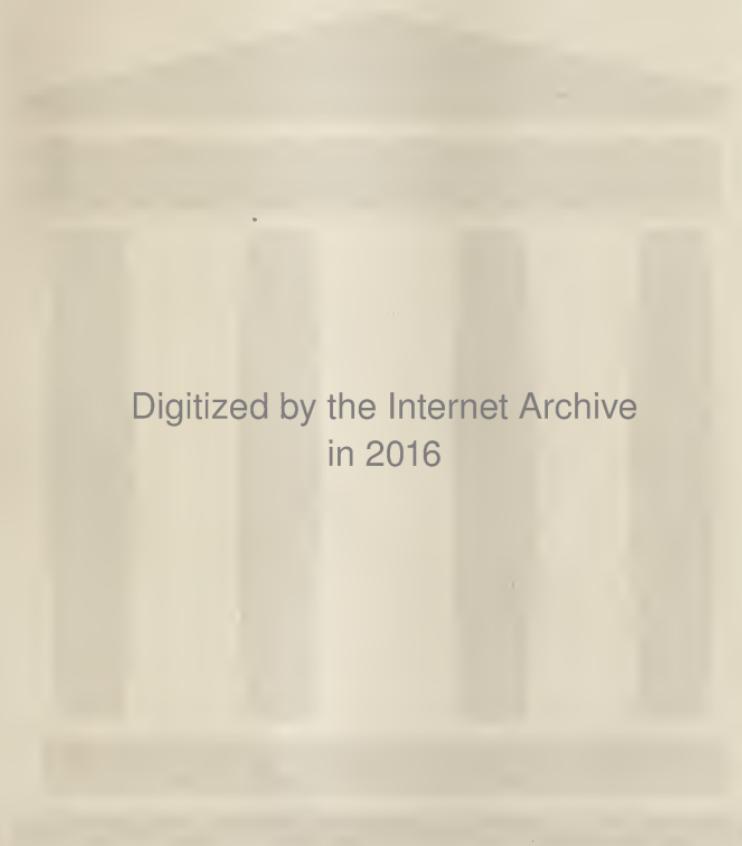
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THE GUIDE

FOR

PIECE-DYEING.



F. W. REISIG,
PRACTICAL DYER, AND CHEMIST, LOWELL, MASS.

CONTAINING ONE HUNDRED RECEIPTS, WITH SAMPLES.

NEW YORK:
JOHN WILEY & SONS,
15 ASTOR PLACE.
1889.

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HISTORICAL
MUSEUM
OF
AMERICA
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BY
F. W. REISIG.
AMERICA

DRUMMOND & NEU,
Electrotypers,
1 to 7 Hague Street,
New York.

FERRIS BROS.,
Printers,
326 Pearl Street,
New York.

THE GUIDE FOR PIECE-DYEING.

ANILINE COLORS.

I have omitted to name the houses from which the dyes and drugs were obtained, used in producing the samples, as it is my object to avoid making this an advertising medium for any particular house, and have therefore declined to accept any advertisement. I have merely given the prices of some of the dyes, so as to be a guide to the strength; but should any subscriber desire to know the house from which they were purchased, I will furnish the information. Should you write, a self-addressed, postage-stamped envelope must be enclosed to insure a reply.

There are so many things which have to do with a piece-dyer's success, with which the dyer has nothing to do, and for which, while he is not at all responsible, yet the manner in which these things are done directly affects the quality of his work, that I have thought in these articles best to call the attention of manufacturers as well as dyers to a few of them. Many dyers are blamed for bad colors or uneven work, when the blame rightfully should rest on the overseers who have charge of the goods before and after they are in the dyer's hands. On account of bad shades or uneven work, which from day to day come under the agent's eye, he at last feels obliged to make a change. He hires a dyer who has been successful in the place where he has worked for perhaps many years, and the manufacturer secures him at advanced pay, hoping that he will fully meet all requirements. Extra care is

taken in the preparation of the goods. The dyer colors them, and they come out perfect in all respects; the dyer is elated to think he has done what his predecessor failed to do, while the agent feels justified in removing the old dyer and paying an increased salary. "A new broom sweeps clean" is the old adage, and never is it more aptly applied than to this barbarous custom of changing a competent dyer in nine cases out of ten. I am writing what nearly every dyer and many agents will indorse heartily when I say (and I say it from forty years' experience in first-class mills) that agents and superintendents rarely, if ever, look for the cause of imperfect dyeing, except to the dyer. The dyer is the alpha and the omega of all bad work. After a few weeks smooth sailing, our new dyer is called to the perch in the finishing-room to look at his poor coloring—seldom, if ever, to examine good work. The dyer, upon being called to see his work, declares with much emphasis that the same dye-stuffs were applied with the same care to this lot of goods as to the one that was so satisfactory at the commencement of his labors: and now we find the same dilemma that caused the old dyer to lose his situation.

My object in writing this notice is to show to agents and superintendents of woolen mills there are causes that many times make it an utter impossibility for a dyer, no matter how competent he may be, to make good and even colors.

The agent gets the best soap, 'pays the highest price (too high in many instances), in order to get good colors, and yet that does not remove the trouble. I claim that it matters little, so far as evenness of color is concerned, what kind of soap is used in scouring or fulling. In my own experience I have many times changed the soap at considerable expense, as well as much inconvenience, without any material benefit ensuing, the trouble being, not poor soap, but a lack of thorough removal of the soap after washing. Further, I believe cloths

are scoured clean, or as clean as they can be, by using no warm water. In some mills they have a tank elevated above the washers, with a cold-water-pipe and a steam-pipe entering it, while another pipe is arranged to thoroughly rinse the clothes in warm water after it has run a given time in cold water. This is absolutely necessary in order to remove the soap, and yet, with all the washing in cold and warm water the overseer is able to give the cloth, he will find himself unable to remove all the soap,—it is almost impossible to get it all out. My attention has been often called to a milky appearance of the water as it is pressed out while in process of winding on the rolls for the steam-box.

A dyer may succeed in getting a decent black on cloths that are soapy, but the condition of the cloth is enough to condemn any dyer, on account of its being hard and stiff. Fuller's-earth is one of the best things, if not the best, to remove soap or grease from cloth. I hold that in order to present the cloth in proper condition to the dyer, great care must be taken before steaming. After the cloths are gigged, and before they are steamed, they should be washed in fuller's-earth thirty minutes, then in water thirty minutes.

The reason of this is, the gig opens the fibres of the goods and gives the fuller's-earth better chance to remove the soap.

All washing should be done before steaming, as the process of steaming fixes any stains or grease which may be on the cloth.

The author has had early training in European schools of instruction, has held important positions in Berlin, Germany, and established the New York and Long Island Woolen Dye-works in 1858, successfully carried on business for fifteen years, and always superintended the dyeing department personally, and is thoroughly acquainted with all branches of the art.

To establish confidence, in order that you may have every opportunity of knowing with whom you are dealing, I herewith

submit you my references. You are requested to make full and satisfactory inquiry. I also invite an inspection of the standing and character of my references. They are all large and responsible firms, and are rated high in the mercantile agencies. Any business individual, firm, or corporation in your own or any other locality, being a subscriber to either Bradstreet's or Dun's Mercantile Agency, will have access to the regularly printed and special reports of said agencies, and can easily obtain the desired information.

By permission I call your attention to the following references. Should you write any of them, a self-addressed, postage-stamped envelope must be enclosed to insure a reply:

MERRIMACK WOOLEN MILLS, Lowell, Mass.

L. W. FAULKNER & SONS, Lowell, Mass.

W. S. TAYLOR & BLOODGOOD, Rahway, N. J.

FAULKNER, PAGE & CO., 66, 68 and 70 Leonard Street, corner of Church, New York City.

NOTE.—The Author is prepared to furnish, at the rate of \$25 each, receipts for any shades not shown in this book, if samples of the colors desired be sent him. In case of difficulty in the dye-house he may be consulted and his services secured if his expenses be paid.

PLAN OF THE WORK.

The author avoids all the tedious and unnecessary reading matter so common in other books on dyeing. His desire is to impart the required information in a plain, simple manner.

In offering the following directions for the use of the aniline dyes, it is not claimed that they are in all cases the very best methods, as almost every dyer of much experience has his own processes for his peculiar work. The object is to present simple formulas by which good results can be obtained by any intelligent person.

The Coal Tar Colors not only rival all the old dyes in beauty and brilliancy, but are also more permanent, cheaper, and more easily applied than any of the old dyeing drugs. In dyeing it is of very great importance for the dyer to be fully posted as to what kind of finish the goods are to have, so he may use coloring matter in producing his shades of color, and apply them in the best method his experience may suggest.

SOLUTIONS.

Dissolve, say, one pound of color in ten gallons of water, and boil for fifteen or twenty minutes.

To get uniform results, to avoid specking, etc., and work economically, all solutions should be filtered through fine cloth.

The dyer can only calculate with the given factors,—and these are the dye-stuffs, alkalies, salts, acids, light, water, and heat; so is the stuff or the fibre which he has to color.

COMPARATIVE HYDROMETER SCALE.

SPECIFIC GRAVITY, BEAUMÉ AND TWADDEL.

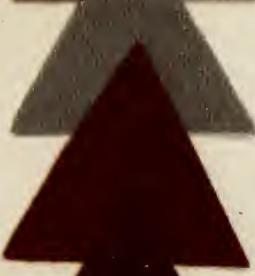
Sp. Gr.	Beaumé.	Twaddel.	Sp. Gr.	Beaumé.	Twaddel.
1.000	0°	0°	1.359	38°	71.8°
1.007	1	1.4	1.372	39	74.4
1.014	2	2.8	1.384	40	76.8
1.022	3	4.4	1.398	41	79.6
1.029	4	5.8	1.412	42	82.4
1.036	5	7.2	1.426	43	85.2
1.044	6	8.8	1.440	44	88.0
1.052	7	10.4	1.454	45	90.8
1.060	8	12.0	1.470	46	94.0
1.067	9	13.4	1.485	47	97.0
1.075	10	15.0	1.501	48	100.2
1.083	11	16.6	1.516	49	103.2
1.091	12	18.2	1.532	50	106.4
1.100	13	20.0	1.549	51	109.8
1.108	14	21.6	1.566	52	113.2
1.116	15	23.2	1.583	53	116.6
1.125	16	25.0	1.601	54	120.2
1.134	17	26.8	1.618	55	123.4
1.143	18	28.6	1.637	56	127.4
1.152	19	30.4	1.656	57	131.2
1.161	20	32.2	1.676	58	135.2
1.171	21	34.2	1.695	59	139.0
1.180	22	36.0	1.715	60	143.0
1.190	23	38.0	1.736	61	147.2
1.199	24	39.9	1.758	62	151.6
1.210	25	42.0	1.779	63	155.8
1.221	26	44.2	1.801	64	160.0
1.231	27	46.2	1.823	65	164.6
1.242	28	48.4	1.847	66	169.4
1.252	29	50.4	1.872	67	174.4
1.261	30	52.2	1.897	68	179.4
1.275	31	55.0	1.921	69	184.2
1.286	32	57.2	1.946	70	189.2
1.298	33	59.6	1.974	71	194.8
1.309	34	61.8	2.002	72	200.4
1.321	35	64.2	2.031	73	206.2
1.334	36	66.8	2.050	74	211.8
1.346	37	69.2	2.087	75	217.4

Seldom, if ever, will the dyer obtain exact match without a little feeding; the cloth he dyes, and the dyes and drugs he uses, may vary from those used in the samples. The practical dyer will see at the first glance by matching if it needs yellow, red, or blue (or all). He will therefore carefully add, according to his judgment—for yellow, turmeric; red, archil; blue, extract indigo. Before the adding, steam should be shut off and the dyes well dissolved in hot water. To avoid unevenness I advise not to feed with aniline.

No. 1.



No. 2.



No. 3.



No. 4.



No. 5.



No. 6.



No. 7.



No. 8.

No. 11.



No. 12.



No. 13.



No. 14.



No. 15.

No. 16.

No. 17.

No. 18.

No. 19.

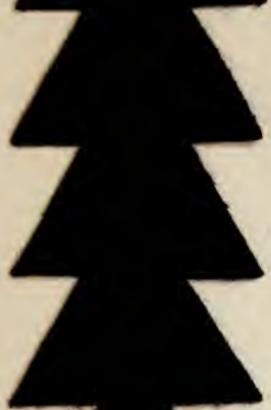
No. 20.



No. 21.



No. 22.



No. 23.



No. 24.



No. 25.



No. 26.



No. 27.



No. 28.



No. 29.



No. 30.



No. 31.



No. 32.



No. 33.



No. 34.



No. 35.



No. 36.



No. 37.



No. 38.



No. 39.



No. 40.





No. 41.



No. 42.



No. 43.



No. 44.



No. 45.



No. 46.



No. 47.



No. 48.



No. 49.

No. 51.



No. 52.



No. 53.



No. 54.



No. 55.



No. 57.



No. 58.



No. 59.



No. 60.

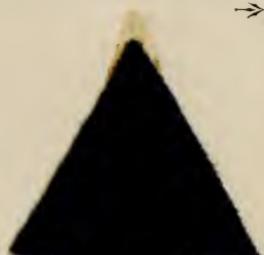




No. 61.



No. 71.



No. 62.



No. 72.



No. 63.



No. 73.



No. 64.



No. 74.



No. 65.



No. 75.



No. 66.



No. 76.



No. 67.



No. 77.



No. 68.



No. 78.



No. 69.

No. 79.

No. 70.

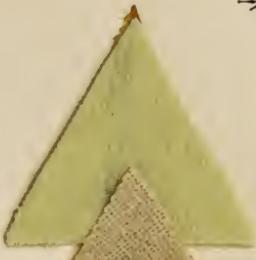
No. 80.



No. 81.



No. 91.



No. 82.



No. 92.



No. 83.



No. 93.



No. 84.



No. 94.



No. 85.



No. 95.



No. 86.



No. 96.



No. 87.



No. 97.



No. 88.



No. 98.



No. 89.



No. 99.



No. 90.



No. 100.



DYEING RECIPES FOR DRESS GOODS.

No. 1.

4 PIECES CLOTH, 70 LBS. WEIGHT.

40 lbs. Glauber's salt,
4 lbs. Alum,
6 lbs. Oil of Vitriol,
 $\frac{1}{4}$ oz. Sal. n. Blue,
 $\frac{1}{4}$ oz. Acid Brown,
 $1\frac{1}{2}$ ozs. Fast Yellow,
1 lb. Archil (per lb. 16 c.),
1 lb. Extract Indigo (16 c.).

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point; boil one hour, cool, and wash.

No. 2.

16 PIECES CLOTH, 275 LBS. WEIGHT.

2½ lbs. Archil (per lb. 16 c.)
8 ozs. Fast Yellow,
4 ozs. Madder,
½ oz. Acid Brown,
6 lbs. Extract Indigo (per lb. 16 c.),
10 lbs. Oil of Vitriol,
5 lbs. Alum,
5 lbs. Oxalic Acid,
65 lbs. Glauber's salt.

Enter cloth at a temperature about 95° Fahrenheit, and gradually raise to boiling-point; boil one hour, cool, and wash.

No. 3.**8 PIECES CLOTH, 320 LBS. WEIGHT.**

120 lbs. Glauber's salt,
10 lbs. Alum,
10 lbs. Oil of Vitriol,
 $\frac{1}{2}$ oz. Sal. n. Blue,
 $\frac{1}{4}$ oz. Acid Brown,
 $3\frac{1}{2}$ ozs. Fast Yellow,
2 lbs. Archil (per lb. 16 c.),
2 lbs. Extract Indigo (16 c.).

Enter cloth at a temperature about 100° Fahrenheit, and gradually raise to boiling-point ; boil one hour, cool, and wash.

No. 4.

2 PIECES CLOTH, 69 LBS. WEIGHT.

1 oz. Fast Yellow,
 $\frac{1}{4}$ oz. Acid Brown,
1 lb. Archil (per lb. 16 c.),
12 ozs. Extract Indigo (per lb. 16 c.),
50 lbs. Glauber's salt,
 6 lbs. Oil of Vitriol.

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point ; boil one hour, cool, and wash.

No. 5.

4 PIECES CLOTH, 70 LBS. WEIGHT.

40 lbs. Glauber's salt,
4 lbs. Alum,
6 lbs. Oil of Vitriol,
2 ozs. Fast Yellow,
 $\frac{1}{4}$ oz. Acid Brown,
1 lb. Archil (per lb. 16 c.),
 $1\frac{1}{2}$ lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash.

No. 6.

4 PIECES CLOTH, 105 LBS. WEIGHT.

Dissolve in cold water 6 lbs. Brown.

Enter cloth at about 100° Fahrenheit, and dye slowly to the boiling-point one hour; cool.

(This color does not fade by exposure to light, and combines with all aniline dyes, whereby a variety of shades may be obtained.)

Second bath:

2 ozs. Fast Red R.,

2 lbs. Archil (per lb. 16 c.),

12 bls. Fast Yellow,

10 ozs. Extract Indigo (per lb. 16 c.),

3 lbs. Turmeric,

6 lbs. Oil of Vitriol,

40 lbs. Glauber's salt.

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash.

No. 7.**2 PIECES CLOTH, 51 LBS. WEIGHT.***(Note.—Dissolve in cold water 6 lbs. Brown.)*

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise to the boiling-point; one hour, just below boiling-point, cool.

(This dye requires no mordant whatever.)

Second bath:

1 oz. Fast Red R.,
4 lbs. Fast Yellow,
1 oz. Extract Indigo,
20 lbs. Glauber's salt,
5 lbs. Oil of Vitriol.

Enter cloth at a temperature of 95° Fahrenheit, gradually raise to the boiling-point; boil one hour, cool, and wash.

No. 8.**8 PIECES CLOTH, 160 LBS. WEIGHT.**

This dye requires no mordant whatever. Add 20 lbs. Brown to a neutral bath.

Enter cloth at 100° Fahrenheit, and gradually raise to the boiling-point; in one hour, below boiling-point, cool.

Second bath :

8 ozs. Fast Red,

8 ozs. Fast Yellow,

60 lbs. Glauber's salt,

8 lbs. Oil of Vitriol.

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash.

No. 9.**8 PIECES CLOTH, 160 LBS. WEIGHT.**

Dissolve 10 lbs. Brown.

Enter cloth at 100° Fahrenheit; gradually raise to the boiling-point; below boiling-point, one hour, cool.

Second bath:

60 lbs. Glauber's salt,
8 lbs. Oil of Vitriol,
8 ozs. Fast Red,
8 ozs. Fast Yellow,
2 lbs. Archil (per lb. 16 c.),
1 lb. Extract Indigo (per lb. 16 c.).

Enter cloth at 100° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash.

No. 10.

8 PIECES CLOTH, 170 LBS. WEIGHT.

24 lbs. Brown.

This dye requires no mordant.

Enter cloth at 100° Fahrenheit; gradually raise to boiling-point; below boiling-point, one hour, cool.

Second bath:

60 lbs. Glauber's salt.

8 lbs. Oil of Vitriol,

6 ozs. Fast Red R.,

8 lbs. Archil (per lb. 16 c.),

12 lbs. Fast Yellow,

4 lbs. Extract Indigo (per lb. 16 c.),

2 lbs. Turmeric.

Enter cloth at temperature 100° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash.

No. 11.

2 PIECES CLOTH, 40 LBS. WEIGHT.

10 lbs. Alum,
1 lb. Oil of Vitriol,
 $2\frac{1}{4}$ lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 120° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash.

No. 12.**2 PIECES CLOTH, 70 LBS. WEIGHT.**

- 15 lbs. Alum,
- 1 lb. Oil of Vitriol,
- 1 oz. Sal. n. Blue,
- 4 ozs. Archil (per lb. 16 c.),
- 2 $\frac{3}{4}$ lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash.

No. 13.

2 PIECES CLOTH, 36 LBS. WEIGHT.

10 lbs. Alum,
10 lbs. Glauber,
2 lbs. Oil of Vitriol,
1 oz. Sal. n. Blue,
8 ozs. Archil (per lb. 16 c.),
3 lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash.

No. 14.

16 PIECES CLOTH, 300 LBS. WEIGHT.

2 ozs. Sal. n. Blue,
2 ozs. Fast Yellow,
50 lbs. Extract Indigo (per lb. 16 c.),
5 lbs. Oxalic Acid,
5 lbs. Oil of Vitriol,
60 lbs. Alum.

Enter cloth at a temperature of about 95° Fahrenheit, and gradually raise to the boiling point; boil one hour, cool, and wash.

No. 15.

16 PIECES CLOTH, 300 LBS. WEIGHT.

1 oz. Fast Yellow,
6 lbs. Archil (per lb. 16 c.),
140 lbs. Extract Indigo (per lb. 16 c.),
10 lbs. White Tartar,
5 lbs. Oil of Vitriol,
10 lbs. Oxalic Acid,
60 lbs. Alum.

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash.

No. 16.

8 PIECES CLOAKING, 278 LBS. WEIGHT.

3 lbs. Bichromate Potassa.

Enter cloth at 150° Fahrenheit, raise to boiling, and boil half an hour ; cool.

Second bath :

1 $\frac{1}{2}$ oz.	Sal. n. Blue,
2 ozs.	Fast Yellow,
7 lbs.	Archil (per lb. 16 c.),
9 lbs.	Extract Indigo (per lb. 16 c.),
6 ozs.	Turmeric,
10 lbs.	Oil of Vitriol,
100 lbs.	Glauber's salt.

Enter cloth at a temperature of about 90° Fahrenheit, and gradually raise to the boiling-point ; boil an hour and a half, cool, and wash.

No. 17.

2 PIECES CLOTH, 40 LBS. WEIGHT.

- 10 lbs. Glauber's salt,
- 10 lbs. Alum,
- 2 lbs. Oil of Vitriol,
- $\frac{3}{4}$ oz. Sal. n. Blue,
- 1 oz. Fast Yellow,
- $1\frac{1}{4}$ lb. Archil (per lb. 16 c.),
- $2\frac{1}{2}$ lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point; boil one hour, cool, and wash.

No. 18.

8 PIECES CLOTH, 170 LBS. WEIGHT.

50 lbs. Glauber's salt,
40 lbs. Alum,
10 lbs. Oil of Vitriol,
3 ozs. Sal. n. Blue,
3 ozs. Fast Yellow,
7 lbs. Archil (per lb. 16 c.),
10 lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 90° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash.

No. 19.

2 PIECES CLOTH, 60 LBS. WEIGHT.

35 lbs. Glauber's salt,
3 lbs. Alum,
5 lbs. Oil of Vitriol,
1 oz. Sal. n. Blue,
3 ozs. Fast Yellow,
4 lbs. Archil (per lb. 16 c.),
3½ lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 90° Fahrenheit, and gradually raise the bath to the boiling-point; boil one hour, cool, and wash.

No. 20.

4 PIECES CLOTH, 82 LBS. WEIGHT.

- 40 lbs. Glauber's salt,
- 20 lbs. Alum,
- 4 lbs. Oil of Vitriol,
- 2 ozs. Sal. n. Blue,
- 6 ozs. Fast Yellow,
- 5½ lbs. Archil (per bl. 16 c.),
- 8 lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point; boil one hour, cool, and wash.

No. 21.

2 PIECES, 40 LBS. WEIGHT.

2 lbs. Fast Red R.,
2 ozs. Fast Yellow,
3 lbs. Extract Indigo,
20 lbs. Glauber's salt,
4 lbs. Oil of Vitriol.

Enter cloth at 100° Fahrenheit, gradually raise to the boiling-point, and boil one hour, cool, and wash well.

No. 22.**8 PIECES CLOTH, 171 LBS. WEIGHT.**

4 lbs. Fast Red R.,
4 ozs. Fast Yellow,
8 lbs. Oil of Vitriol,
40 lbs. Glauber's salt,
7 lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at 100° Fahrenheit, gradually raise to the boiling-point, and boil one hour; cool.

Second bath :

4 lbs. Fast Red R.,
4 ozs. Fast Yellow,
8 lbs. Extract Indigo,
20 lbs. Glauber's salt.
4 lbs. Oil of Vitriol.

Enter cloth at 100° Fahrenheit, gradually raise to the boiling-point, boil one hour, cool, and wash well.

No. 23.

16 PIECES CLOTH, 300 LBS. WEIGHT.

4 lbs. Fast Red R.,
1½ lbs. Acid Magenta,
27 lbs. Extract Indigo (per lb. 16 c.).
100 lbs. Glauber's salt,
10 lbs. Oil of Vitriol.

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point; boil one hour, cool, and wash well.

No. 24.

4 PIECES CLOTH, 80 LBS. WEIGHT.

1 lb. 4 ozs. Fast Red R.,
6 ozs. Acid Magenta,
12 ozs. Extract Indigo,
4 lbs. Oil of Vitriol,
30 lbs. Glauber's salt.

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash well.

No. 25.**4 PIECES CLOTH, 73 LBS. WEIGHT.**

4 ozs. Fast Red,
4 ozs. Acid Magenta,
25 lbs. Archil (per lb. 16 c.),
12 lbs. Extract Indigo (per lb. 16 c.),
5 lbs. Oil of Vitriol,
35 lbs. Glauber's salt.

Enter cloth at 100° Fahrenheit, gradually raise to the boiling-point, and boil one hour; cool.

Second bath :

8 ozs. Violet 6 B.,
1 lb. Extract Indigo,
1 lb. Oil of Vitriol,
10 lbs. Glauber's salt.

Enter cloth at 100° Fahrenheit, gradually raise to the boiling-point, boil one hour, cool, and wash.

No. 26.**16 PIECES CLOTH, 300 LBS. WEIGHT.**

- 4 ozs. Fast Yellow,
- 8 lbs. Madder,
- 7 lbs. Extract Indigo (per lb. 16 c.),
- 4 ozs. Acid Brown,
- $\frac{1}{2}$ oz. Sal. n. Blue,
- 5 lbs. Archil (per lb. 16 c.),
- 10 lbs. Oil of Vitriol,
- 10 lbs. Alum,
- 100 lbs. Glauber's salt,
- 5 lbs. Oxalic Acid.

Enter cloth at a temperature of about 95° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash.

No. 27.

16 PIECES CLOTH, 300 LBS. WEIGHT.

5 ozs. Fast Yellow,
½ oz. Sal. n. Blue,
4 ozs. Acid Brown,
4 lbs. Archil (per lb. 16 c.),
4 lbs. Madder,
4 lbs. Extract Indigo (per lb. 16 c.),
5 lbs. Oxalic Acid,
5 lbs. Alum,
10 lbs. Oil of Vitriol,
100 lbs. Glauber's salt.

Enter cloth at a temperature of about 95° Fahrenheit, gradually raise to the boiling-point, and boil one hour, cool, and wash.

No. 28.

4 PIECES CLOTH, 110 LBS. WEIGHT.

80 lbs. Glauber's salt,
5 lbs. Alum,
10 lbs. Oil of Vitriol,
5 ozs. Fast Yellow,
3 lbs. Archil (per lb. 16 c.),
 $\frac{1}{2}$ oz. Acid Brown,
 $1\frac{3}{4}$ lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point; boil one hour, cool, and wash.

No. 29.

4 PIECES CLOTH, 70 LBS. WEIGHT.

- 40 lbs. Glauber's salt,
- 4 lbs. Alum,
- 6 lbs. Oil of Vitriol,
- 3 ozs. Fast Yellow,
- $\frac{1}{4}$ oz. Acid Brown,
- 2 lbs. Archil (per lb. 16 c.),
- $1\frac{1}{2}$ lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point; boil one hour, cool, and wash.

No. 30.

2 PIECES CLOTH, 40 LBS. WEIGHT.

4 ozs. Fast Yellow,
½ oz. Acid Brown,
1½ lbs. Archil (per lb. 16 c.),
1 lb. Extract Indigo (per lb. 16 c.),
5 lbs. Oil of Vitriol,
25 lbs. Glauber's salt.

Enter cloth at a temperature of about 95° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash.

No. 31.

4 PIECES CLOTH, 80 LBS. WEIGHT.

40 lbs. Glauber's salt,
5 lbs. Alum,
10 lbs. Oil of Vitriol,
 $\frac{1}{2}$ oz. Sal, n. Blue,
 $\frac{3}{4}$ oz. Fast Yellow,
1 lb. Archil (per lb. 16 c.),
4 lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point; boil one hour, cool, and wash.

No. 32.**4 PIECES CLOTH, 80 LBS. WEIGHT.**

50 lbs. Glauber's salt,
5 lbs. Alum,
10 lbs. Oil of Vitriol,
 $\frac{1}{2}$ oz. Sal. n. Blue,
 $1\frac{1}{4}$ ozs. Fast Yellow,
4 ozs. Archil (per lb. 16 c.),
1 lb. 2 ozs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash.

No. 33.

4 PIECES CLOTH, 90 LBS. WEIGHT.

40 lbs. Glauber's salt,
6 lbs. Alum,
10 lbs. Oil of Vitriol,
 $\frac{1}{2}$ oz. Sal. n. Blue,
 $1\frac{1}{4}$ ozs. Fast Yellow,
 $1\frac{1}{2}$ lbs. Archil (per lb. 16 c.),
2 lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point; boil one hour, cool, and wash.

No. 34.

4 PIECES CLOTH, 85 LBS. WEIGHT.

40 lbs. Glauber's salt.

10 lbs. Alum,

5 lbs. Oil of Vitriol,

$\frac{3}{4}$ oz. Fast Yellow,

$\frac{3}{4}$ oz. Sal. n. Blue,

$1\frac{1}{4}$ lbs. Archil (per lb. 16 c.),

3 lbs. 2 ozs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point; boil one hour, cool, and wash.

No. 35.

8 PIECES CLOTH, 274 LBS. WEIGHT.

30 lbs. Alum,
5 lbs. Oil of Vitriol,
40 lbs. Glauber's salt,
5 lbs. Archil (per lb. 16 c.),
12 lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 120° Fahrenheit, and gradually raise the bath to the boiling-point; boil one hour, cool, and wash.

No. 36.**4 PIECES CLOTH, 125 LBS. WEIGHT.**

12 lbs. Brown.

Dye requires no mordant.

Enter cloth at 100° Fahrenheit; raise gradually to the boiling-point; one hour below boiling-point, cool and wash.

Second bath :

70 lbs. Glauber's salt,
8 lbs. Oil of Vitriol,
4 ozs. Fast Red,
2 lbs. Fast Yellow,
10 lbs. Archil (per lb. 16 c.),
7 lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at 100° Fahrenheit, gradually raise to the boiling-point, and boil one hour, cool, and wash.

No. 37.

2 PIECES CLOTH, 40 LBS. WEIGHT.

25 lbs. Glauber's salt,
6 lbs. Oil of Vitriol,
2 lbs. Alum.
2 lbs. Fast Yellow,
8 lbs. Archil (per lb. 16 c.),
4 lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point; boil one hour, cool, and wash.

No. 38.

2 PIECES CLOTH, 40 LBS. WEIGHT.

20 lbs. Glauber's salt,
5 lbs. Oil of Vitriol,
2 lbs. Alum,
2 lbs. Fast Yellow,
7 lbs. Archil (per lb. 16 c.),
4 lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of 100° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash.

No. 39.**8 PIECES CLOTH, 170 LBS. WEIGHT.**

12 lbs. Brown.

Dye requires no mordant.

Enter cloth at 100° Fahrenheit, gradually raise to the boiling-point; one hour below boiling, cool.

Second bath:

70 lbs. Glauber's salt,
8 lbs. Oil of Vitriol,
6 ozs. Fast Red R.,
18 lbs. Fast Yellow,
15 lbs. Archil (per lb. 16 c.),
28 lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at 100° Fahrenheit, and gradually raise the bath to the boiling-point; boil one hour, cool, and wash well.

No. 40.

8 PIECES CLOTH, 190 LBS. WEIGHT.

80 lbs. Glauber's salt,
8 lbs. Oil of Vitriol,
5 lbs. Alum,
8 ozs. Fast Red R.,
18 lbs. Fast Yellow,
30 lbs. Archil (per lb. 16 c.),
48 lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash.

No. 41.

4 PIECES CLOTH, 140 LBS. WEIGHT.

30 lbs. Alum,

6 lbs. Archil (per lb. 16 c.),

28 lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at 120° Fahrenheit, and gradually raise the bath to the boiling-point; boil an hour and a half, cool, and wash.

No. 42.

8 PIECES CLOTH, 170 LBS. WEIGHT.

30 lbs. Glauber's salt,
40 lbs. Alum,
5 lbs. Oil of Vitriol,
8 ozs. Sal. n. Blue,
2 ozs. Fast Yellow,
6 lbs. Archil (per lb. 16 c.),
42 lbs. Extract Indigo (per lb. 16 c.),

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point; boil an hour and a half, cool, and wash.

No. 43.**6 PIECES CLOTH, 150 LBS. WEIGHT.**

1 lb. Sal. n. Blue,
6 ozs. Fast Yellow,
2 lbs. Archil (per lb. 16 c.),
50 lbs. Glauber's salt,
8 lbs. Oil of Vitriol.

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash well; and enter second bath of—

35 lbs Alum,
25 lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at 130° Fahrenheit; boil an hour and a half, cool, wash well, and finish.

No. 44.**8 PIECES CLOTH, 170 LBS. WEIGHT.**

2 lbs. Sal. n. Blue,
8 ozs. Fast Yellow,
4 lbs. Archil (per lb. 16 c.),
50 lbs. Glauber's salt,
8 lbs. Oil of Vitriol.

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point; boil one hour, cool, and wash well. Finish in second bath—

80 lbs. Extract Indigo (per lb. 16 c.),
60 lbs. Alum,
2 lbs. Turmeric.

Enter cloth at 130° Fahrenheit, raise to the boiling-point; boil an hour and a half, cool, wash well.

No. 45.

2 PIECES CLOTH, 40 LBS. WEIGHT.

20 lbs. Glauber's salt,
2 lbs. Oil of Vitriol,
20 lbs. Alum,
4 ozs. Sal. n. Blue,
3 lbs. Archil (per lb. 16 c.),
40 lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 95° Fahrenheit, and gradually raise to the boiling-point; boil an hour and a half, cool, and wash well.

No. 46.

8 PIECES CLOTH, 205 LBS. WEIGHT.

80 lbs. Glauber's salt,
20 lbs. Alum,
10 lbs. Oil of Vitriol,
5 lbs. Oxalic Acid,
1 lb. Fast Yellow,
8 ozs. Acid Brown,
16 lbs. Archil (per lb. 16 c.),
6 lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point; boil one hour, cool, and wash.

No. 47.

8 PIECES CLOTH, 276 LBS. WEIGHT.

8 ozs. Acid Brown,
1 $\frac{3}{4}$ lbs. Fast Yellow,
11 $\frac{1}{2}$ lbs. Archil (per lb. 16 c.),
7 lbs. Extract Indigo (per lb. 16 c.),
10 lbs. Oil of Vitriol,
80 lbs. Glauber's salt.

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point; boil one hour, cool, and wash.

No. 48.

8 PIECES CLOTH, 170 LBS. WEIGHT.

60 lbs. Glauber's salt,
8 lbs. Oil of Vitriol,
5 lbs. Alum,
12 lbs. Fast Yellow,
11 lbs. Archil (per lb. 16 c.),
15 lbs. Extract Indigo (per lb. 15 c.),
3 lbs. Turmeric.

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point; boil one hour, cool, and wash.

No. 49.

4 PIECES CLOTH, 100 LBS. WEIGHT.

50 lbs. Glauber's salt,
6 lbs. Oil of Vitriol,
4 lbs. Alum,
16 lbs. Fast Yellow,
8 lbs. Archil (per lb. 16 c.),
8 lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 120° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash.

No. 50.

2 PIECES CLOTH, 55 LBS. WEIGHT.

40 lbs. Glauber's salt,
6 lbs. Oil of Vitriol,
2 ozs. Fast Red,
4 lbs. Fast Yellow,
5 lbs. Archil (per lb. 16 c.),
7 lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 110° Fahrenheit, and gradually raise the bath to the boiling-point; boil one hour, cool, and wash.

No. 51.

2 PIECES CLOTH, 44 LBS. WEIGHT.

3 ozs. Fast Yellow,
4 ozs. Archil (per lb. 16 c.),
3 lbs. Extract Indigo (per lb. 16 c.),
10 lbs. Alum,
2 lbs. Oil of Vitriol,
2 lbs. Glauber's salt.

Enter cloth at a temperature of about 110° Fahrenheit, and gradually raise the bath to the boiling-point; boil one hour, cool, and wash.

No. 52.

2 PIECES CLOTH, 40 LBS. WEIGHT.

4 ozs. Fast Yellow,
9 ozs. Archil (per lb. 16 c.),
9 lbs. Extract Indigo (per lb. 16 c.),
8 ozs. Turmeric,
10 lbs. Alum,
2 lbs. Oil of Vitriol,
2 lbs. Glauber's salt,

Enter cloth at a temperature of about 110° Fahrenheit, and gradually raise the bath to the boiling-point; boil one hour, cool, and wash.

No. 53.

2 PIECES CLOTH, 40 LBS. WEIGHT.

- 1 lb. Fast Yellow,
- 2 lbs. Archil (per lb. 16 c.),
- 8 lbs. Extract Indigo (per lb. 16 c.),
- 2 lbs. Oil of Vitriol.
- 10 lbs. Alum,
- 20 lbs. Glauber's salt.

Enter cloth at a temperature of about 110° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash.

No. 54.

16 PIECES CLOTH, 300 LBS. WEIGHT.

4 lbs. Fast Yellow,
4 lbs. Madder,
24 lbs. Archil (per bl. 16 c.),
16 lbs. Turmeric,
60 lbs. Extract Indigo (per lb. 16 c.),
100 lbs. Glauber's salt,
30 lbs. Alum,
10 lbs. Oil of Vitriol.

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash.

No. 55.

8 PIECES CLOTH, 161 LBS. WEIGHT.

80 lbs. Alum,
60 lbs. Extract Fustic,
16 lbs. Archil (per lb. 16 c.),
50 lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 130° Fahrenheit, and gradually raise the bath to the boiling-point; boil two hours, cool, and wash.

No. 56.

4 PIECES CLOTH, 80 LBS. WEIGHT.

25 lbs. Glauber's salt,
10 lbs. Alum,
4 lbs. Oil of Vitriol,
 $1\frac{1}{2}$ ozs. Sal. n. Blue,
 $\frac{3}{4}$ oz. Fast Yellow,
 $\frac{3}{4}$ oz. Violet 6 B.,
 $1\frac{1}{2}$ lbs. Archil (per lb. 16 c.),
 $1\frac{1}{2}$ lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point; boil one hour, cool, and wash.

No. 57.**2 PIECES CLOTH, 38 LBS. WEIGHT.**

- 20 lbs. Glauber's salt,
- 4 lbs. Oil of Vitriol,
- 5 lbs. Alum,
- 2 ozs. Sal. n. Blue,
- $\frac{1}{2}$ oz. Fast Yellow,
- $\frac{1}{4}$ oz. Acid Magenta,
- 2 lbs. Archil (per lb. 16 c.),
- $1\frac{1}{2}$ lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point; boil one hour, cool, and wash.

No. 58.

8 PIECES CLOTH, 250 LBS. WEIGHT.

25 lbs. Glauber's salt,
3 ozs. Sal. n. Blue,
8 ozs. Fast Yellow,
5½ lbs. Archil (per lb. 16 c.),
12 lbs. Extract Indigo (per lb. 16 c.),
80 lbs. Alum,
5 lbs. Oil of Vitriol.

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise to the boiling-point; boil two hours, cool, and wash.

No. 59.

2 PIECES CLOTH, 36 LBS. WEIGHT.

- 10 lbs. Glauber's salt,
- 10 lbs. Alum,
- 2 lbs. Oil of Vitriol,
- 1 oz. Sal. n. Blue,
- 1 oz. Fast Yellow,
- 1½ lbs. Archil (per lb. 16 c.),
- 3½ lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 120° Fahrenheit, and gradually raise the bath to boiling-point; boil one hour, cool, and wash.

No. 60.

8 PIECES CLOTH, 170 LBS. WEIGHT.

35 lbs. Alum,

9 lbs. Archil (per lb. 16 c.),

45 lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 130° Fahrenheit, gradually raise to the boiling-point, and boil an hour and a half, cool, and wash.

No. 61.

16. PIECES CLOTH, 300 LBS. WEIGHT.

1 oz. Sal. n. Blue,
10 ozs. Fast Yellow,
4 ozs. Madder,
2 ozs. Acid Brown,
20 lbs. Archil (per lb. 16 c.),
14 lbs. Extract Indigo (per lb. 16 c.),
5 lbs. Alum,
5 lbs. Oxalic Acid,
12 lbs. Oil of Vitriol,
120 lbs. Glauber's salt.

Enter cloth at a temperature of about 95° Fahrenheit, and gradually raise to the boiling-point; boil an hour and a half, cool, and wash.

No. 62.**16 PIECES CLOTH, 300 LBS. WEIGHT.**

1 lb. Fast Yellow,
2 lbs. Madder,
1 oz. Sal. n. Blue,
18 lbs. Archil (per lb. 16 c.),
20 lbs. Extract Indigo (per lb. 16 c.),
12 lbs. Oil of Vitriol,
10 lbs. Alum,
100 lbs. Glauber's salt,

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise to the boiling-point; boil two hours, cool, and wash.

No. 63.

2 PIECES CLOTH. 36 LBS. WEIGHT.

- 20 lbs. Glauber's salt,
- 6 lbs. Oil of Vitriol,
- 1½ lbs. Fast Yellow,
- 2 lbs. Archil (per lb. 16 c.),
- 2½ lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash.

No. 64.

16 PIECES CLOTH, 300 LBS. WEIGHT.

2 lbs. Fast Yellow,
4 lbs. Madder,
1 lb. Acid Brown,
13 lbs. Archil (per lb. 16 c.),
12 lbs. Extract Indigo (per lb. 16 c.),
5 lbs. Oxalic Acid,
5 lbs. Alum,
12 lbs. Oil of Vitriol,
100 lbs. Glauber's salt.

Enter cloth at a temperature of about 95° Fahrenheit, and gradually raise to the boiling-point; boil an hour and a half, cool, and wash.

No. 65.

2 PIECES CLOTH, 30 LBS. WEIGHT.

10 ozs. Fast Yellow,
2 lbs. 2 ozs. Archil (per lb. 16 c.),
1 oz. Acid Brown,
1 lb. Extract Indigo (per lb. 16 c.),
5 lbs. Oil of Vitriol,
20 lbs. Glauber's salt.

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash.

No. 66.

4 PIECES CLOTH, 140 LBS. WEIGHT.

40 lbs. Alum,

55 lbs. Extract Indigo (per lb. 16 c.),

4 lbs. Archil (per lb. 16 c.),

4 lbs. Extract Fustic.

Enter cloth at a temperature of about 130° Fahrenheit, and raise to the boiling-point; boil two hours, cool, and wash.

No. 67.

16 PIECES CLOTH, 300 LBS. WEIGHT.

14 lbs. Extract Fustic,
4 lbs. Archil (per lb. 16 c.),
170 lbs. Extract Indigo (per lb. 16 c.),
80 lbs. Alum.

Enter cloth at a temperature of about 130° Fahrenheit, and raise to the boiling-point; boil two hours, cool, and wash.

No. 68.

8 PIECES CLOTH, 160 LBS. WEIGHT.

25 lbs. Extract Fustic,
1 lb. Archil,
80 lbs. Alum,
120 lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of 130° Fahrenheit, gradually raise to the boiling-point, boil two hours, cool, and wash.

No. 69.

16 PIECES CLOTH, 300 LBS. WEIGHT.

80 lbs. Alum,

12 lbs. Archil (per lb. 16 c.),

40 lbs. Extract Fustic,

215 lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of 130° Fahrenheit, raise to the boiling, and boil two hours, cool, and wash.

No. 70.

2 PIECES CLOTH, 60 LBS. WEIGHT.

6 lbs. Extract Fustic,
1½ lbs Archil,
50 lbs. Extract Indigo,
2 lbs. Turmeric.
30 lbs. Alum.

Enter cloth at 130° Fahrenheit, gradually raise to the boiling-point, and boil two hours, cool, and wash.

No. 71.

2 PIECES CLOTH, 36 LBS. WEIGHT.

20 lbs. Glauber's salt,
6 lbs. Oil of Vitriol,
1½ ozs. Sal. n. Blue,
1 oz. Fast Yellow,
1 ¾ lbs. Archil (per lb. 16 c.),
1 lb. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point; boil one hour, cool, and wash.

No. 72.

8 PIECES CLOTH, 160 LBS. WEIGHT.

40 lbs. Alum,
10 lbs. Archil (per lb. 16 c.),
4 ozs. Fast Yellow,
25 lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise to the boiling-point; boil two hours, cool, and wash.

No. 73.

2 PIECES CLOTH, 40 LBS. WEIGHT.

10 lbs. Alum,
3 lbs. Archil (per lb. 16 c.),
4 ozs. Fast Yellow,
8 lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point; and boil one hour, cool, and wash.

Any Drab-mode shades are obtained by regulating the dye with Yellow, Blue, and Red.

No. 74.

2 PIECES CLOTH, 75 LBS. WEIGHT.

8 ozs. Bichromate Potash (one hour, cool, and wash),
12 ozs. Sal. n. Blue,
4 lbs. Archil (per lb. 16 c.),
25 lbs. Glauber's salt,
5 lbs. Oil of Vitriol.

Enter cloth at 100° Fahrenheit, raise to boiling, and boil one hour, cool, and wash well.

Second bath :

45 lbs. Extract Indigo (per lb. 16 c.),
16 lbs. Alum.

Enter at 130° Fahrenheit, and raise to boiling-point ; boil two hours, cool, and wash well.

No. 75.

4 PIECES CLOTH, 85 LBS. WEIGHT.

40 lbs. Alum,

4 lbs. Archil (per lb. 16 c.),

82 lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 130° Fahrenheit, and gradually raise to the boiling-point; and boil two hours, cool, and wash.

No. 76.

4 PIECES CLOTH, 85 LBS. WEIGHT.

12 lbs. Brown.

Requires no mordant.

Enter cloth at 100° Fahrenheit, gradually raise to boiling-point; below boiling one hour, cool.

Second bath :

3 ozs. Fast Red R.,
4 lbs. Archil (per lb. 16 c.),
6 lbs. Fast Yellow,
1 lb. Turmeric,
 $2\frac{1}{4}$ lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at temperature of 100° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash.

No. 77.**4 PIECES CLOTH, 140 LBS. WEIGHT.**

1½ lbs. Bichromate Potash,
1½ lbs. Oil of Vitriol.

Enter cloth at 150° Fahrenheit, raise to boiling in one hour, cool.

Second bath :

18 lbs. Fast Yellow,
10 lbs. Archil (per lb. 16 c.),
16 lbs. Extract Indigo (per lb. 16 c.),
6 lbs. Oil of Vitriol,
50 lbs. Glauber's salt.

Enter cloth at a temperature of about 100° Fahrenheit, gradually raise to the boiling-point; and boil an hour and a half, cool, and wash.

No. 78.

8 PIECES CLOTH, 278 LBS. WEIGHT.

3 lbs. Bichromate Potash,
3 lbs. Oil of Vitriol.

Enter cloth at 150° Fahrenheit, raise to boiling in one hour, cool.

Second bath :

32 lbs. Fast Yellow,
18 lbs. Archil (per lb. 16 c.),
30 lbs. Extract Indigo (per lb. 16 c.),
12 lbs. Oil of Vitriol,
100 lbs. Glauber's salt.

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point; and boil one hour, cool, and wash.

No. 79.

16 PIECES CLOTH, 300 LBS. WEIGHT.

- 12 lbs. Fast Yellow,
- 1½ lbs. Fast Red R.,
- 50 lbs. Archil (per lb. 16 c.),
- 70 lbs. Extract Indigo (per lb. 16 c.),
- 12 lbs. Oil of Vitriol,
- 10 lbs. Alum,
- 100 lbs. Glauber's salt.

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point; and boil an hour and a half, cool, and wash.

No. 80.

4 PIECES CLOTH, 100 LBS. WEIGHT.

4 lbs. Bichromate Potash,
1 lb. Oil of Vitriol.

Enter cloth and boil two hours, wash, and finish in second bath—

100 lbs. Logwood (bolted),
6 lbs. Fustic “

Boil one hour in bags, cool, and enter cloth at 140° Fahrenheit, raise to the boiling, and boil two hours, cool, and wash.

No. 81.

2 PIECES CLOTH, 35 LBS. WEIGHT.

- 20 lbs. Glauber's salt,
- 5 lbs. Oil of Vitriol,
- 1 oz. Fast Yellow,
- 1 lb. Archil (per lb. 16 c.),
- 1 oz. Extract Indigo (per lb. 16 c.),
- $\frac{1}{2}$ oz. Acid Brown.

Enter cloth at 100° Fahrenheit, and gradually raise to the boiling-point; and boil one hour, cool, and wash.

No. 82.**2 PIECES CLOTH, 38 LBS. WEIGHT.**

- 20 lbs. Glauber's salt,
- 5 lbs. Oil of Vitriol,
- 3 ozs. Extract Indigo (per lb. 16 c.),
- 1½ lbs. Archil (per lb. 16 c.).

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash.

No. 83.

2 PIECES CLOTH, 30 LBS. WEIGHT.

- 15 lbs. Glauber's salt,
- 4 lbs. Oil of Vitriol,
- 3 ozs. Extract Indigo (per lb. 16 c.),
- 1½ lbs. Archil (per lb. 16 c.).

Enter cloth at 100° Fahrenheit, and gradually raise to the boiling-point; and boil one hour, cool, and wash.

No. 84.

4 PIECES CLOTH, 86 LBS. WEIGHT.

Dissolve 4 ozs. Nicholson Blue 6-B.

Add to the dye-bath 1 lb. Sal-soda or Borax.

Enter cloth at about 110° Fahrenheit, and work up slowly to just below the boil, keeping it there from 20 to 30 minutes, according to shade required; cool, and wash well.

Second bath :

Cold water. Develop the color in a bath slightly acidulated with Sulphuric Acid, and wash again in cold water.

To match a shade :

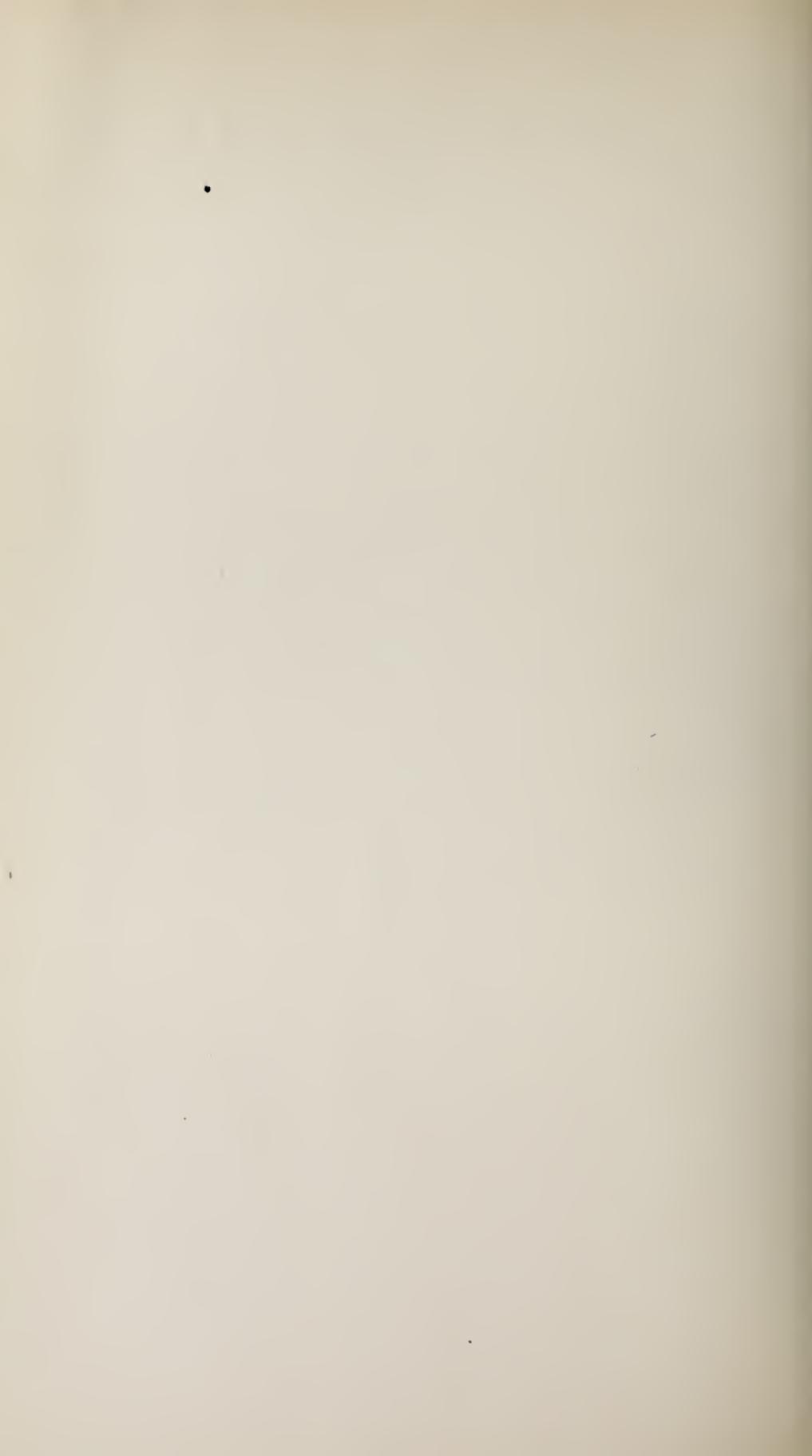
Cut off a small piece of the fabric, wash, and then spring in the acidulated bath.

No. 85.

4 PIECES CLOTH, 120 LBS. WEIGHT.

1 lb. Naphthaline Yellow,
1 lb. Oil of Vitriol,
8 lbs. Glauber's salt.

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point; and boil one hour, cool, and wash.



No. 86.

4 PIECES CLOTH, 110 LBS. WEIGHT.

1 lb. Orange V.,
1 lb. Oil of Vitriol,
8 lbs. Glauber's salt.

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point ; and boil one hour, cool, and wash.

This or any other shade of Orange can be obtained with Naphthaline Yellow and Fast Red R. or Scarlet.

No. 87.

16 PIECES CLOTH, 200 LBS. WEIGHT.

5½ lbs. Scarlet,

6½ lbs. Oil of Vitriol.

130 lbs. Glauber's salt.

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise to the boiling-point; and boil one hour, cool, and wash.

No. 88.**2 PIECES CLOTH, 42 LBS. WEIGHT.**

2 lbs. Alum,
5 lbs. Oil of Vitriol,
20 lbs. Glauber's salt,
 $2\frac{1}{4}$ ozs. Fast Yellow,
8 ozs. Archil (per lb. 16 c.),
 $\frac{1}{4}$ oz. Sal. n. Blue,
 $2\frac{1}{4}$ lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise to the boiling-point; and boil one hour, cool, and wash.

No. 89.

2 PIECES CLOTH, 40 LBS. WEIGHT.

1½ lbs. Extract Indigo (per lb. 16 c.),
2 ozs. Fast Yellow,
2½ lbs. Archil (per lb. 16 c.),
½ oz. Brown,
5 lbs. Oil of Vitriol,
20 lbs. Glauber's salt,
4 lbs. Alum.

Enter cloth at a temperature of 100° Fahrenheit, gradually raise to the boiling-point, and boil one hour, cool, and wash.

No. 90.**2 PIECES CLOTH, 40 LBS. WEIGHT.**

3 ozs. Fast Yellow,
½ oz. Acid Brown,
2½ lbs. Archil (per lb. 16 c.),
2½ lbs. Extract Indigo (per lb. 16 c.),
5 lbs. Oil of Vitriol,
20 lbs. Glauber's salt.

Enter cloth at a temperature of about 100° Fahrenheit, gradually raise to the boiling-point, and boil one hour, cool, wash.

No. 91.

2 PIECES CLOTH, 36 LBS. WEIGHT.

1 oz. Fast Yellow,
½ oz. Extract Indigo,
10 lbs. Alum,
1 lb. White Tartar,
3 lbs. Oil of Vitriol,
15 lbs. Glauber's salt.

Enter cloth at about 65° Fahrenheit, dye up to the required shade, just below 130° Fahrenheit, and wash.

No. 92.

8 PIECES CLOTH, 159 LBS. WEIGHT.

1 oz. Fast Yellow,
1 oz. Archil,
1 oz. Extract Indigo,
5 lbs. Oxalic Acid,
10 lbs. Oil of Vitriol,
75 lbs. Glauber's salt.

Enter cloth at about 65° Fahrenheit, gradually raise to the boiling, and boil one hour, cool, and wash.

No. 93.

16 PIECES CLOTH, 300 LBS. WEIGHT.

4 ozs. Extract Indigo (per lb. 16 c.),
2½ ozs. Fast Yellow,
2 lbs. Madder,
2 ozs. Acid Brown,
1 lb. Archil (per lb. 16 c.),
5 lbs. Alum,
10 lbs. Oil of Vitriol,
130 lbs. Glauber's salt.

Enter cloth at 100° Fahrenheit, gradually raise to the boiling, and boil one hour, cool, wash.

No. 94.

2 PIECES CLOTH, 36 LBS. WEIGHT.

20 lbs. Glauber's salt,
4 lbs. Oil of Vitriol,
8 ozs. Fast Red R.

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point; and boil 30 minutes, cool, and wash.

No. 95.

4 PIECES CLOTH, 80 LBS. WEIGHT.

25 lbs. Glauber's salt,
4 lbs. Oil of Vitriol,
1 lb. Fast Red R.,
8 ozs. Acid Magenta,
4 ozs. Extract Indigo.

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point; and boil one hour, cool, and wash.

No. 96.**4 PIECES CLOTH, 82 LBS. WEIGHT.**

8 ozs. Fast Red R.,
4 lbs. Oil of Vitriol,
20 lbs. Glauber's salt.

Enter at 100° Fahrenheit, and gradually raise to the boiling-point; boil 30 minutes, cool.

Second bath:

1 lb. Acid Magenta,
12 ozs. Extract Indigo,
2 lbs. Oil of Vitriol,
20 lbs. Glauber's salt.

Enter at 100° Fahrenheit, gradually raise to the boiling-point, and boil 30 minutes, cool, and wash.

No. 97.

12 PIECES CLOTH, 240 LBS. WEIGHT.

60 lbs. Alum,
8 lbs. Oxalic Acid,
35 lbs. Extract Indigo (per lb. 16 c.),
2 lbs. Extract Fustic.

Enter cloth at 120° Fahrenheit, raise to boiling, and boil two hours, cool, wash well.

No. 98.

2 PIECES CLOTH, 40 LBS. WEIGHT.

4 ozs. Fast Red R.,
12 ozs. Fast Yellow,
1 lb. Archil (per lb. 16 c.),
 $\frac{1}{2}$ lb. Brown,
20 lbs. Glauber's salt,
5 lbs. Oil of Vitriol.

Enter cloth at a temperature of about 100° Fahrenheit, gradually raise to the boiling-point; boil one hour, cool, and wash.

No. 99.

2 PIECES CLOTH, 40 LBS. WEIGHT.

- 10 lbs. Alum,
- 2 lbs. Oil of Vitriol,
- 2 lbs. Glauber's salt,
- 1 lb. Fast Yellow,
- 10 ozs. Archil (per lb. 16 c.),
- 2 $\frac{3}{4}$ lbs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of 100° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash.

No. 100.

2 PIECES CLOTH, 40 LBS. WEIGHT.

- 10 lbs. Alum,
- 2 lbs. Oil of Vitriol,
- 2 lbs. Glauber's salt,
- 1 lb. Fast Yellow,
- 15 ozs. Archil (per lb. 16 c.)
- 5 $\frac{3}{4}$ lbs. Extract Indigo (per lb. 16 c.),
- 1 lb. Turmeric.

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise to the boiling-point; boil one hour, cool, and wash.

REGINA PURPLE.

The fastest Purple dye yet produced; very valuable for light shades of Lavender and light tints, where the fastness is a great desideratum. This dye, although exceedingly strong, does not come in so cheap, nor is yet so bright as Hofmann's Violets.

Dissolve, say, one pound color in about ten gallons water, heat, and well stir until the color is dissolved.

Dye in neutral bath, but the color may be varied to almost any shade of blueness by the addition of more or less Sulphuric Acid to the bath. This color is recommended for light shades.

ALKALI VIOLET.

CLOTH 30 LBS. WEIGHT.

Dissolve 4 ozs. Borax,
5 ozs. Alkali Violet.

Enter cloth at 120° Fahrenheit, and gradually raise to the boiling; when dark enough, cool and wash, and finish in

Second bath :

Lukewarm, with 12 ozs. Sulphuric Acid.

Enter cloth; in half an hour, wash.

Note.—This process is the same as for Nicholson Blue, and produces faster color than any other Violet.

COCHINEAL SCARLET.

CLOTH, 140 LBS. WEIGHT.

- 14 lbs. Cochineal,
- 5 lbs. White Tartar,
- $\frac{1}{2}$ lb. Oxalic Acid,
- 12 ozs. Tin Crystals,
- 1 lb. 6 ozs. Flavine,
- 4 quarts Muriate Tin.

Enter cloth at 130° Fahrenheit, raise to the boiling, and boil one hour, cool, and wash well.

**DYEING ALIZARINE, BROWN OR BLUE,
ON CLOTH.**

Mordant at boiling temperature to about an hour and a half with 3 per cent Bichromate Potash ($2\frac{1}{2}$ per cent Tartar is recommended), and then wash well.

Before mordanting, the cloth must be carefully cleaned.

Enter the dye bath at a temperature of 80° Fahrenheit, raise to boil within one hour, keep boiling for an hour to an hour and a half, cool, and wash.

ALIZARINE BLUE.

R. per lb. 37 c. Dark shade of 100 lbs. cloth, 30 lbs. color. Blue (D. N.), 76 c. per lb. 15 lbs. color of 100 lbs. cloth.

ALIZARINE BROWN.

CLOTH, 520 LBS. WEIGHT.

3 lbs. Bichromate Potash,
2 lbs. Gray Tartar,
1 lb. Blue Vitriol,

which is supposed to help the woods or extracts.

Enter cloth at 150° Fahrenheit, raise to the boiling,
boil half an hour, cool.

Second bath :

72 lbs. Bolted Fustic,
23 lbs. Bolted Logwood.

Boil about 15 minutes, cool, and add the Alizarine
(150 lbs.), Air-slacked Lime, and Acetic Acid (15 lbs.).

Enter cloth at 90° Fahrenheit, raise gradually to the
boiling-point, and boil an hour and a half to two hours,
cool, and wash.

Note.—2 ozs. Slacked Lime to a pound of Alizarine
is recommended.

LOGWOOD BLUE.

CLOTH, 300 LBS. WEIGHT.

10 lbs. Alum,
6 lbs. Oxalic Acid,
4 lbs. Bichromate Potash.

Enter at temperature 130° Fahrenheit, boil two hours, cool.

Second bath :

40 lbs. Bolted Logwood,
1 lb. Sal. n. Blue.

Boil for one hour, cool, and enter cloth at a temperature of about 100° Fahrenheit, and gradually raise the bath to the boiling-point, and boil two hours, cool, and wash well.

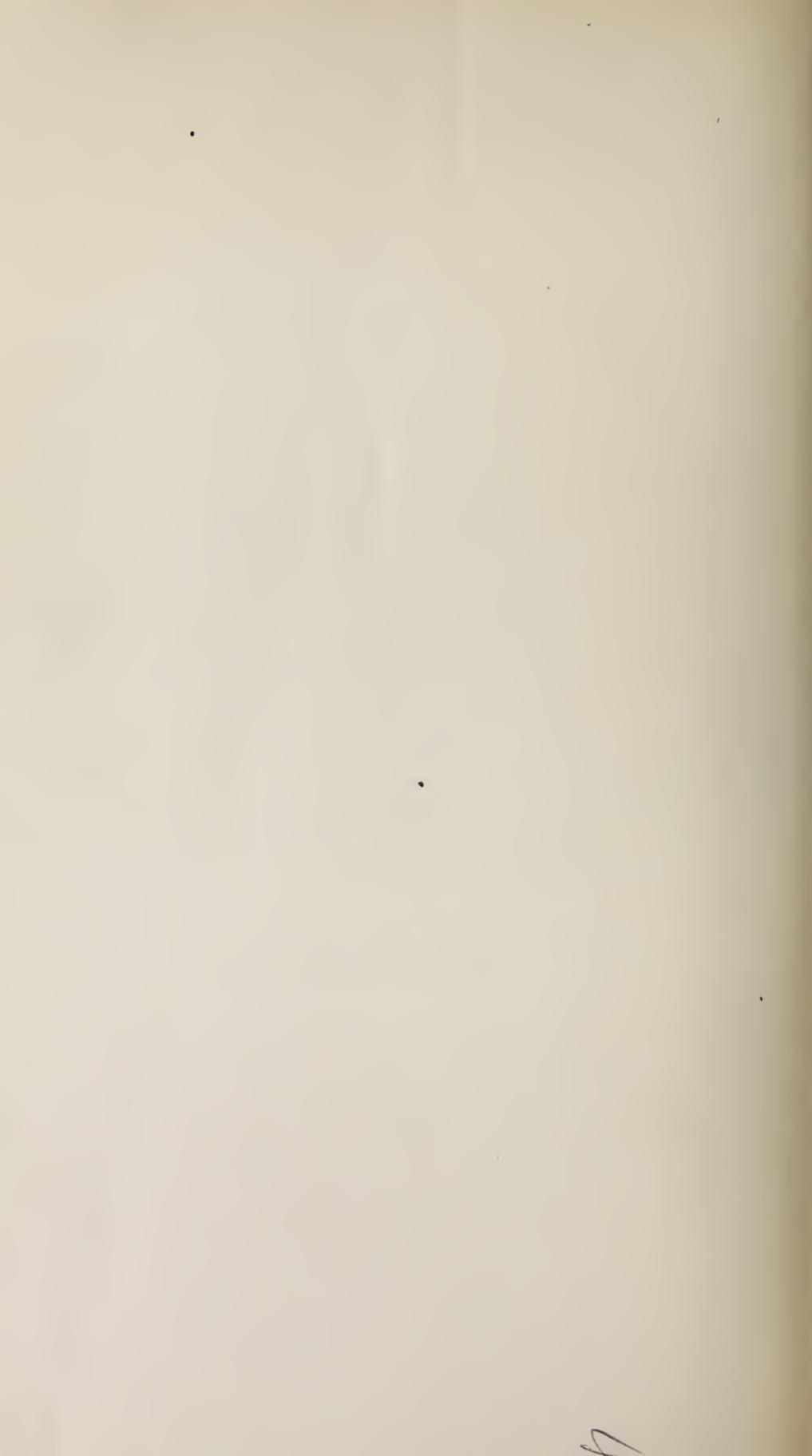
COLOR OXBLOOD.

CLOTH, 20 LBS. WEIGHT.

4 ozs. Fast Red R.,
8 ozs. Acid Magenta,
2 lbs. Archil (per lb. 16 c.),
10 ozs. Extract Indigo (per lb. 16 c.).

Enter cloth at a temperature of about 100° Fahrenheit, and gradually raise to the boiling-point, and boil one hour, cool, and wash well.

Extract Sumac, Black-iron Liquor, and the jigger should be used, and well washed after iron.



Cloth containing 25 to 40 per cent cotton can be dyed the same as receipts given (on dark shades only). To allow for Sumac and iron, the color should be a little lighter than sample. After dyeing, Sumac one hour, 30 minutes in iron.

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